SECTION C Descriptions and Specifications

1.0 INTRODUCTION

The Contractor shall provide engineering and technical support services for submarine and surface ship acoustical trials in the assessment of current measurement procedures and the improvement thereof for acoustic trials and special trials related studies in the assessment of noise measurement systems, and in the collection, reduction, analysis and reporting of submarine trials data in accordance with established standards. These Contractor support tasks shall include the development of trial documentation and test plans prior to each at-sea period as well as the preparation of final reports following the completion of trials. Engineering and technical support efforts shall encompass radiated, platform, sonar self, structureborne and airborne noise measurement disciplines, as well as trials coordination, evaluation of current measurement and acoustic data processing systems, including artificial intelligence based systems. Ongoing program assistance shall also be provided to implement short and long term program assessment, cost cycles and analysis, and program documentation.

2.0 SCOPE OF WORK

The specific tasks to be performed in support of the Submarine and Surface Ship Acoustical Trials Program shall be similar to those outlined in the subsequent paragraphs. Task assignments shall be specified in individual delivery orders. Some services required under specific tasks shall be performed at NSWCCD and onboard US Navy submarines or surface ships during the conduct of trials. Additionally services shall be performed at other Navy facilities, i.e. HAYES, South Florida Testing Facility, Bayview, and SEAFAC sites, and at the Contractor's facilities. Specific locations for the performance of individual task assignments shall be defined in the individual task orders.

A. Task 1 - Radiated-Noise Measurements, Analysis and Reporting

The Contractor shall assist in data acquisition, analysis, and reporting of radiated-noise, far-field acoustic signatures during submarine and surface ship acoustical trials. Develop recommendations for test and evaluation of ship systems and machinery components. Reduce and compile far-field signature levels into report-ready formats. Train ship’s force in onboard, acoustic measurement techniques and help to maintain acoustic life cycle tracking of individual submarines. Ensure that objectives of the Submarine Acoustic Signatures Maintenance Program (SASMP) are fully accomplished. Support preparation, conduct, and documentation of signature trials using current and future measurement systems located onboard HAYES and SEAFAC.

The Contractor shall assess the effectiveness of ship silencing features incorporated into USS LOS ANGELES and USS OHIO classes of submarines. The Contractor shall assist NSWCCD in assessments of design options for incorporation of innovative and cost-effective silencing technologies into future naval combatants, including the VIRGINIA and DDX classes. Perform research studies of submarine quieting techniques and ship design parameters in order to maximize stealth features.

B. Task 2 - Submarine Detection and Detectability (D&D) Studies

The Contractor shall perform services in the specialized areas of detection and counter-detection calculations for a variety of platforms and detection systems, acoustic vulnerability algorithms for U.S. and foreign submarines, and performance assessment techniques for various geographical locations and environmental conditions. Formulate application of the figure-of-merit (FOM) equation to acoustic signature results. This work enables preparation of the Fleet-standard Detection and Detectability (D&D) reports for submarines undergoing full-scale and extended operating cycle acoustical trials.

The Contractor shall review acoustical trial results and input all measurement data into the Detection and Delectability Work Station (DDWS); provide D&D recommendations for ship messages on trial findings; perform detectability range predictions and determine acoustic vulnerability profiles of the test vessel; and summarize radiated-noise and self-noise signatures for the deploying submarines. Calculate and format estimated ranges for

both steady-state conditions and transient evolutions, and for both broadband and narrowband frequency components. Draft textual material for appropriate sections of the D&D report. Prepare a Homeport Brief of information to be presented to each submarine, including graphical presentations and electronic wave files of silencing deficiency items.

C. Task 3 - Submarine and Surface Ship Noise Source Localization and Analysis

The Contractor shall provide engineering and scientific support in the localization, identification, and definition of shipboard noise sources. These efforts shall be in support of noise sources/acoustic problems on specific ships, classes of ships, or in support of new designs such as VIRGINIA Class submarines and DDX, CVNX, and JCCX Class surface ships. In this task, the Contractor shall analyze the full range of acoustic data available from the Acoustic Trials Program, including radiated noise, platform and sonar self-noise, and structureborne noise. Of particular interest shall be the development of noise source localization techniques and procedures to correlate the radiated noise sources to structureborne noise hull array and platform noise hydrophone measurements. Improved radiated noise source localization methods and algorithms to determine the specific areas of the submarine/surface ship hull radiating noise shall also be investigated and evaluated. Noise sources and propagation paths for vibration sources controlling the bow area sonars shall also be investigated and evaluated using platform noise hydrophones and hull/structurally mounted accelerometers.

As part of this effort, the Contractor shall develop experiments and tests that shall be conducted during Acoustic Trials to identify and quantify specific noise sources and/or source localization techniques. This shall include test planning, equipment and processing technique identification, test conduct, and post-test data analysis and reporting. The Contractor shall also provide technical expertise in the area of submarine and surface ship low frequency vibration measurement and analysis for at-sea trials.

The Contractor shall provide engineering support in the acquisition and analysis of acoustic data during new construction Builder's trials of USS ARLEIGH BURKE (DDG 51) Class destroyers. In this task, the Contractor shall install data acquisition equipment such as ELAPS and SSNFS for the acquisition of sonar element level data, sonar dome, hydrophone, and accelerometer data. The data during the trial and provide post trial analysis. The Contractor shall analyze sonar self-noise data acquired by the building yard using either the ADAAS collector system or SIMAS and provide a written report detailing the sonar self-noise results.

The Contractor shall provide engineering and technical support during all phases of the post construction acoustic trials for USS ARLEIGH BURKE (DDG 51) Class. Specific efforts in the area of sonar self-noise include: contribute to pre-trial meetings and provide agenda inputs; dockside setup and testing of sonar self-noise hardware: ADAAS collector, SSNFS, and ELAPS; perform AN/SQS-53C receive sensitivity measurements, shaker tests, and any other pretrial tests; collect data at-sea; analyze data and provide report input; and assist with post trial hardware removal. The Contractor shall provide real time recommendations for additional test scenarios to isolate problems / anomalies observed in the collected data. For post trial analysis, the Contractor shall perform modeling of sonar self-noise data using software such as ELAPS Analysis Tools; and Estimation and Prediction of Components (EPOC).

As required, the Contractor will provide underwater inspections, photography, and test support by providing the services of qualified divers ensuring all prerequisites are met. Prior to performing any dive services, the Contractor shall provide a Dive Plan and Emergency Assistance Checklist as referenced in Section J for approval by the Contracting Officer's Representative.

The Contractor shall provide engineering and technical support in the determination and correction of acoustic problems/anomalies reported by surface ships; squadron; type desk; or Fleet Technical Support Center. Specific efforts shall include: communication/coordination with the fleet, squadron, and other organizations involved; determining data acquisition equipment requirements; developing specialized test fixtures; developing a test agenda; performing dockside equipment load, checkout, and testing; coordinating data acquisition; and providing post test data reduction and reporting. The Contractor shall also provide a post test ship briefing with recommendations for the correction of the problem or further testing required. The Contractor shall acquire and analyze data from the

following hull, keel and towed array sonar: AN/SQS-56; AN/SQR-19; AN/SQS-53 (all variants) and AN/SQS-32. Dockside/at-sea testing and alignments shall include but not limited to: sonar receive sensitivity, shaker tests, air emission system lineup and adjustment, anomaly investigations, spoke localization, own ship radiated noise measurement using the towed array, and shipboard noise localization.

The Contractor shall provide support in the conduct of Surface Ship Radiated Noise Measurements and Post Construction (PCON) acoustic trials. This support shall be in the preparation, briefings, trial direction, shipboard localization of noise sources, as well as post trial data reduction, analysis and report production. Shipboard team personnel shall provide setup and operation of the trial tracking /ranging system, demonstrate performance in providing range safety and shipboard maneuvering recommendations during SSRNM testing at Navy ranges, propeller/shafting monitoring assessment; air emission system lineup and operation; and shipboard engineering on major combatants to enable coordination with ships forces to ensure that the ships propulsion and power plant operating conditions are in accordance with the SSRNM requirements. Radiated noise measurement assistance requires a demonstrated performance as a radiated noise analyst during the conduct of US Navy surface combat ship acoustic trials in support of post construction acoustic trials, Strike Force COMTUEX measurements, and other U.S. Navy designated trials. The Contractor shall operate the shore side hardware and software for data acquisition and analysis.

D. Task 4 - Oceanographic Research Vessel/Hydrographic Survey Vessel Support

The Contractor shall provide engineering and scientific services, materials, and personnel necessary to support the conduct of R&D evaluations and trials on oceanographic research vessels and hydrographic survey ships. The Contractor shall provide technical support for R&D acoustic evaluations intended to verify design and platform acceptability for various acoustic systems, both towed and platform-mounted. As part of this, the Contractor shall provide project management support and interface with the Government. This support will include preparing program plans, participating in ship design reviews, participating in program review meetings, and developing documentation for ship design improvements.

The Contractor shall provide Pre-Trial planning and preparation support. Efforts will include: determining the test conditions that need to be evaluated on the test vessel; generating test plans and test run agendas; determining the test equipment and sensors that need to be measured during dockside and at-sea testing; measurement or analysis system software development/support as necessary; and reviewing appropriate data and documentation that could impact the test or trial. The Contractor shall conduct pre-trial ship checks as necessary to plan for at-sea tests and trials.

The Contractor shall provide trial direction support during the conduct of at-sea tests and trials. The Contractor will support the direction of trials by acting as the interface between the trial party and the ship's crew, ensuring ship operating conditions are in accordance with those specified in test plan or trial agenda, and ensuring that any diving operations/inspections are conducted in a safe and effective manner.

The Contractor shall participate in and support TAGS acoustic trials and at-sea acoustic evaluations. The Contractor shall support the platform noise and sonar self-noise phases of NAVOCEANO research and survey ships. This support will include: performing instrumentation and equipment calibrations during the pre-trial dockside load periods; acquiring acoustic data during at-sea test and acoustic trial periods, and performing on-site data analysis to ensure the adequacy and accuracy of acquired data. At the conclusion of at-sea tests and trials, the Contractor shall prepare required "quick-look" report and/or message inputs in NSWCCD specified formats.

After the conclusion of at-sea tests and trials, the Contractor shall conduct post trial data analysis in accordance with trial requirements and objectives, and fully document the data acquired during tests and trials. Analysis will be conducted to verify ongoing design efforts for backfit and future ship designs. The Contractor will prepare inputs for NSWCCD final reports documenting trial data and analysis results. These inputs shall be prepared in the format provided by NSWCCD.

E. Task 5 - Submarine and Surface Ship Silencing Effectiveness

The Contractor shall assess the effectiveness of Submarine and Surface Ship Silencing efforts and identify silencing needs for present and future designs. These efforts shall involve the analysis of radiated noise, platform and sonar self-noise, and structureborne noise data. Performance models that relate acoustic detection and detectability shall be developed and utilized to relate the acoustic performance consequences of submarine and Surface Ship silencing efforts, goals, and requirements relative to specific threats and operating environments. These models and the resulting silencing performance estimates shall be used to identify goals for future designs and priorities for system improvements. The effectiveness of specific silencing designs, techniques, and ShipAlts on existing ships shall also be evaluated by assessing the acoustic improvements found in the radiated and/or sonar self-noise. Machinery vibration data, especially the attenuation provided across machinery mounting and isolation systems, shall also be utilized in these assessments.

The Contractor shall provide engineering and technical services necessary for routinely assessing the effectiveness of the USNS HAYES Silencing Program. The Contractor shall assist in maintaining the USNS HAYES acoustic posture, which involves the installed acoustic silencing features and equipment. The Contractor shall perform the administrative, engineering and quality assurance support tasks required by the USNS HAYES Silencing Program.

F. Task 6 - Transient Noise Studies

The Contractor shall conduct studies, investigations, and analyses of transient noise sources, noise mechanisms, transmission characteristics, and detectability characteristics against threat sensor systems. These efforts shall include the analysis of radiated noise and onboard sensors as well as the development of measurement techniques and procedures. Specific efforts shall include the identification and quantification of transient noise producing sources, evaluation of source components and operations that cause the transient noise, and evaluation of transient noise consequences. Class investigations shall be conducted that consider the ship missions and operating requirements for the systems/evolutions that are known to produce transient noise. As an example, a manual for fleet usage could be developed to increase fleet awareness of these problems and to establish procedures for ships to operate transient noise producing systems with some degree of covertness. This would involve determining the detectability characteristics of transient noise sources in terms of time length, frequency content, potential threat processing systems, and operating environments.

As part of this task, the Contractor shall also be required to plan and conduct at-sea evaluations to monitor transient noise sources, determine silencing techniques and system modifications, evaluate the effectiveness of silencing designs, and develop measurement and data analysis procedures and methods.

G. Task 7 - Own Ship Noise Monitoring

The Contractor shall conduct studies and develop procedures and techniques to monitor submarine radiated noise using onboard sensors. The specific monitor sensors of interest include platform noise hydrophones, hull and machinery mounted accelerometers, and towed arrays. This task shall involve the analysis of the relationships between the radiated noise and the onboard sensor data for a wide range of ship operating conditions. These relationships are expressed in terms of transfer functions between the platform noise and the radiated noise and between the structureborne noise and the radiated noise. These studies shall be conducted for operational classes of ships such as SSN 21, SSN 688 and SSBN 726 Classes and shall be utilized for implementation within onboard monitoring systems, especially the SSN 21 and VIRGINIA class Total Ship Monitoring System (TSMS). In the development of these transfer functions and monitoring techniques, the Contractor shall determine the accuracy of the various techniques in terms of frequency coverage, specific ship operating conditions, sensor locations, types and numbers, and processing and averaging schemes. Potential techniques and methods shall be evaluated at-sea to determine applicability and usage. For this, the Contractor shall develop experiments and provide test documentation and conduct studies to demonstrate the capability of different techniques. Data analysis, processing methods, and ship procedures that can be implemented by the fleet or within fleet systems shall be identified and developed. Guidance for data interpretation shall also be provided to fleet users of the developed techniques and methods.

The Contractor shall provide engineering support in the acquisition and analysis of surface ship towed array data. The Contractor shall install and operate the Towed array Receiver Acoustic Data Gathering and Interface System (TRADGIS) and the hardcopy LOFARgram system. Part of the tasking will be to develop test plans and test geometries for the acquisition of own ship and mutual ship radiated noise, brief surface combatants on the geometries, acquire data, and perform post-test analysis. The Contractor shall also provide post-test processing of TRADGIS and LOFARgram data with the end result being the development of an SSRNM style report with narrowband, one-third-octave band, and LOFARgram figures and a tone table.

The Contractor shall provide engineering support during the development of SPPFS-STDA (Sonar Performance Prediction Functional Segment- Sonar Tactical Decision Aid) as part of the AN/SQQ-89A (V) 15 combat systems suite. Specific efforts will include supporting the integration of the sonar self-noise automated analysis software formerly known as SAMANTHA. Additionally, the Contractor shall develop test cases for testing all aspects of the decision aide that will also include end to end testing of the sonar self-noise acquisition software through to the output of the analysis software. Part of the testing will require developing a method to play acoustic data into the acquisition-processing end. The Contractor could also be tasked to provide concepts for a real time version of the software where analysis of sonar self-noise will occur as it is being acquired.

H. Task 8 - Submarine Vibration Monitoring Program (VMP) and Fleet Maintenance Activity (FMA) Data Analysis and Studies

The Contractor shall perform data analyses and studies in support of the Submarine Vibration Monitoring Program (VMP) and Fleet Maintenance Activity (FMA). This shall include the processing and analysis of ship vibration data acquired by VMP site teams, the identification of vibration problems for monitored machinery systems, the reporting of the data analysis to the fleet, and propose recommendations to correct the identified problems. The Contractor shall evaluate Submarine VMP and FMA measurement techniques and propose improvements when required.

The Contractor shall also develop software and data management tools for the analysis of the Submarine Hull Vibration Monitoring Program. This shall be developed so Government can review this data efficiently and develop spatial plots and class averages compatible with the SSN 688 Class monitoring system. The Contractor shall also evaluate the feasibility of developing expert system techniques and software for the Submarine VMP and FMA data base management systems. As part of this, the Contractor shall evaluate the compatibility of the present data base management system with the SSN 21 TSMS for all submarine classes.

I. Task 9 - Acoustic Trial Direction Support

The Contractor shall provide engineering and technical support for the planning, conduct, and execution of full-scale submarine and surface ship acoustic trials. Specific efforts shall include operation of the trial ranging system and, in the case of submarine trials, the fire control system to insure that acoustic run geometries are maintained in accordance with agenda requirements; coordination with ships force to ensure that ship operating conditions such as speed, depth, and machinery lineups, are in accordance with agenda requirements; coordination with measurement and analysis personnel to ensure that acoustic problems are documented and information on acoustic problems is transmitted to all on-site activities involved with problem resolution and in trial planning stages to develop agenda inputs based on the given technical requirements.

The Contractor shall provide engineering and technical services, incidental materials, procedures, facilities and personnel necessary for routinely assessing the effectiveness of the USNS HAYES Silencing Program. The Contractor shall assist in maintaining the USNS HAYES acoustic posture, which involves the installed acoustic silencing features and equipment. The Contractor shall perform the administrative, engineering and quality assurance support tasks required by the USNS HAYES Program.

J. Task 10 - Low Frequency Submarine Target Strength Studies and Analyses

The Contractor shall conduct studies and analyses of low frequency submarine target strength data and characteristics. These efforts shall include the analysis of low frequency target strength data obtained on full scale submarines, both coated and uncoated, and a range of scale models, up to the size of the KAMLOOPS model. As part of this effort, the Contractor shall be required to develop low frequency target strength tests and trial objectives, determine measurement requirements, develop trial agendas and test plans, participate in the trial conduct and data acquisition during the at-sea tests, and provide data processing support. An important aspect of the target strength studies shall be a determination of the ship's vulnerability to detection from low frequency sonar emissions. This shall require the use of an active sonar detection model, which considers monostatic, bistatic, and multistatic operating systems. The Contractor shall also provide studies in support of the target strength range planned for the Bayview ARD facility at Lake Pend Oreille.

K. Task 11 - Submarine Silencing Development and Design Studies

The Contractor shall perform studies, analyze test results, and provide evaluations in support of submarine silencing development and ship design. These efforts shall include the analysis of the noise characteristics on present classes of submarines, the identification of silencing techniques that can be applied to correct existing acoustic deficiencies, the evaluation of prototype installations on submarines, and the investigation of noise mechanisms and transmission. The primary thrust of this task shall be to provide guidance for future silencing R&D efforts and submarine silencing design inputs for SSN 21 and VIRGININA class, and backfit applications to SSN 688 and SSBN 726 Classes. Noise mechanisms and transmission characteristics shall be evaluated during full-scale acoustic trials and with the NSWCCD KAMLOOPS and LSV models at the Bayview ARD facility. The Contractor shall develop tests and experiments for the KAMLOOPS model which shall evaluate the mechanisms of sonar self-noise generation in terms dome shape, dome material properties, bow area vibration characteristics, bow area treatments, and flow discontinuities aft of the dome. The Contractor shall provide test planning for these experiments, identify test requirements, determine measurement and data processing needs, develop sensor configurations and locations, provide test conduct support, and analyze and report the results. Of particular concern shall be the interpretation of the model scale results in terms of equivalent full-scale characteristics. The Contractor shall provide similar efforts for the evaluation of propulsors and propulsion systems using the LSV. Again the importance of the model scale test results shall be evaluated in terms of full-scale submarine radiated noise characteristics.

L. Task 12 - Acoustic Measurement and Data Acquisition System Development

The Contractor shall provide acoustic measurement and data acquisition system development support for the Submarine and Surface Ship Acoustic Trial functional areas. This shall include the acquisition and processing of radiated noise, structureborne noise, and platform and sonar self-noise data. These efforts shall include the analysis of acoustic trial reporting requirements, identification of signal processing techniques and methods, development of system specifications, determination of adequacy of commercially available instrumentation, development of software operating systems and codes, determination of interfacing requirements with ship systems such as sonar and fire control, and validation and verification of data acquisition system operability and accuracy. The development of acoustic measurement and data acquisition systems shall include state of the art techniques, such as acoustic holography and bi-spectral analysis. After researching available technology, the Contractor shall develop system specifications and an overall system architecture. The Contractor shall also provide software development for the measurement system operation.

The Contractor shall provide software development for existing acoustic trial measurement and data acquisition and processing systems. This software development would primarily provide improved signal processing, efficiency, or user operability to presently used systems. Documentation of existing and modified software and development of system user manuals would be included in this task.

The Contractor shall develop software for the acquisition and analysis of surface ship acoustic data similar to Acoustic Data Acquisition and Analysis Software (ADAAS). This would include the acquisition, analysis, or post processing of data from the following systems: surface ship hull and keel mounted sonar’s AN/SQS-53 (all variants) and AN/SQS-56; AN/SQR-19 Towed Array; NSWC’s Hardcopy LOFARgram system; and NSWC’s SSNFS system.

In order determine the source of sonar self noise problems the Contractor shall work with the acoustic models of sonar self-noise signatures. This could involve the modification / expansion of the NSWC /NUWC 32 bit Estimation and Prediction Of Components (EPOC32) software used to model sonar self noise signatures for DDG 51, CG 47, or DD 963 classes.

The Contractor shall develop automated analysis software similar to the Sonar Activeband Measurement Analysis through Automation (SAMANTHA). Tasking will include the development of data flow logic diagrams to demonstrate the processing and decision flow of the software prior to software development; develop software and fully test all software logic.

The Contractor shall design, develop, and build specialized test fixtures, software, and acquisition equipment to acquire surface ship noises data and investigates surface ship noise anomalies. This will include breakout of sonar area element data to select any of the 576 array elements, testing for reverse wired and dead transducer elements, time correlation to determine direction of noise sources, mapping of noise levels from sonar array elements, and acquisition of sonar data for the conduct of self-noise surveys including receive sensitivity, transmit source levels, and transmit and receive beam patterns.

M. Task 13 - Database Management System Development and Maintenance

The Contractor shall provide technical support in the development and maintenance of the individual database management systems used by the radiated noise, platform and sonar self-noise, structureborne noise, submarine vibration monitoring program, and trial directors functional groups. These database management systems provide historical data storage and retrieval, class statistical analyses, and trend analysis. This support shall include evaluation of database management systems requirements, development of system specifications, identification of system components, software development, software validation and verification, software maintenance, development of system documentation and user guides, and data entry. As appropriate, the Contractor shall apply system technology to database management systems so Government can reduce the time necessary to analyze acoustic trial data. This would include a data validation technique that would automatically mark data that appears invalid. This is critical to the application of other automated data analysis techniques that the Contractor shall develop since it ensures that further analysis is based on accurate data. Another feature of the system development would be the automated analysis of all of the data from a given event and the determination of noise deficiencies of interest. This feature would evaluate the level, signal to noise ratio, and other factors of importance for a specified data set and provide a report of all tonals that could possibly be of interest to the analyst.

The Contractor shall accomplish technical enhancements to automated resources that support analysis, modeling, and reporting of radiated noise and D&D acoustic test data. These are the Detection and Detectability Workstation (DDWS), analyst view station (AVS), transient processing system, and Gatekeeper. The Contractor shall provide development, maintenance, and administration of a centralized database and web server. Support performance assessment techniques for tactical considerations on current Navy platforms and for acoustic susceptibility calculations of future naval combatants, and engineering requirements for an integrated database of diverse, disparate measurements.

The Contractor shall perform functional allocations to identify required tasks and their interrelationships, in order to develop the next generation of DDWS and supporting systems using web-enabled protocols. Determine the most efficient methods for database management of large volumes of radiated and self-noise signatures of U.S. and foreign ships. Derive new performance assessment techniques and acoustical trial report objectives, and determine common data formats for a variety of Navy activities and programs that rely upon radiated-noise results promulgated by NSWCCD in several automated formats.

The Contractor shall develop full-spectrum acoustic vulnerability algorithms applicable to radiated-noise measurements and predictions, against sensors and processors in numerous oceanographic areas and littoral regions. Modify stealth vulnerability algorithms applicable to the reactive threat, one that is technologically feasible with

worldwide evolutionary trends in noise reduction and signal processing. Define signal processing features, sonar display settings, and figure-of-merit parameters

N. Task 14 - Program Management Support

The Contractor shall evaluate signatures measurement objectives and specifications, review the Program of Record in meeting customer product requirements, and assist with high-level Navy action items and program objectives, such as those appropriate to the Acoustic Health Advisory Board (AHAB). Develop training material and documentation on the historical transition of RDT&E products to the current fleet and to new ship designs. Provide recommendations for implementation of submarine stealth technologies and noise reduction features. The Contractor shall support verification, validation, and accreditation (VV&A) for modeling and simulation requirements through documentation of system capabilities and meeting criteria established by the Navy.

The Contractor shall provide management and administrative support during the financial development phase for a number of incoming projects. Develop project-tracking procedures for various funded accounts, monitor direct labor spending against project codes, and verify financial expenditures using cost database systems. The Contractor shall provide reports on work progress in regard to financial analysis and monitoring, and participate with program managers in financial status and planning meetings.

O. Task 15 - Instrumentation at NSWCCD Sites

In performance of this contract, the Contractor will be required to perform services at various NSWCCD sites. Instrumentation may be made available at these sites for the purposes of acoustical data acquisition at-sea and at test sites for signal processing and analysis in support of tasks issued under this contract. The Contractor shall be required from time to time to provide support services and materials for proper equipment operation and utilization in contract performance.

The Contractor shall provide required NSWCCD Dive Locker Equipment support and dive support for any NSWCCD Acoustic facilities and sites, as required.